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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,775	03/25/2004	Arthur Metcalfe		9599

7590 07/25/2006

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EXAMINER

ELVE, MARIA ALEXANDRA

ART UNIT PAPER NUMBER

1725

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/810,775	Applicant(s) METCALFE ET AL.	
	Examiner M. Alexandra Elve	Art Unit 1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 27 April 2006.
- 2a) This action is **FINAL**.
- 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-25 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-25 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 25 March 2004 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. _____.
 - 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| <ul style="list-style-type: none"> 1) <input type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____. | <ul style="list-style-type: none"> 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____. 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____. |
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DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-14, 16-20 & 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mustonen (USPN 5,262,608) in view of Donaldson et al. (USPN 5,753,574).

Mustonen discloses an underwater cutting and welding torch. The apparatus includes a first and second chamber, a hydraulic motor (in the first chamber) and an external source of pressurized liquid medium. At one end of the movable shaft of the motor, an elongated electrode is connected, at least a portion of which is adapted to extend out of the body through an opening in the body. Via the shaft, the motor transmits a rotating or reciprocating motion to the electrode. An electric current is conducted from an external power supply source to the electrode via an electrically conductive member, which is fitted in the second chamber around at least a portion of the electrode.

The electrode can have various shapes and cross sections. For example, circular quadrangular, hexagonal or elliptical. An elongated electrode is moved by means of the hydraulic motor in a rotating or reciprocating motion or a combination of motions. The

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electrode is partially surrounded by an electrical conductor disposed in the second chamber. The conductor is preferably made of graphite. Electric current is conducted from an external power supply source with a cable through the conductor to the electrode. The nozzle connected with the electrode is made of a heat resistant material such as a ceramic. (abstract, figures, cols. 1-3).

Mustonen discloses the presence of an electrode in rod and disc shapes, but does not specifically teach the composition of the electrode.

Donaldson et al. discloses a ceramic electrode having the composition $MB_{2-z}+N$, wherein $0 < z < 0.10$ and M is selected from the group of Zr, Hf and Ti and N is selected from the group Cu, Au and Ag. MB_{2-z} defines a ceramic matrix structure with a void volume of 10% and N occupies at least 70% of the void space. Powder is typically the starter material. (abstract, cols. 2, 6-8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the composition of the high erosion resistant electrode as taught by Donaldson et al. in the Mustonen system because the high erosion resistant electrode is desirable in the electrode degrading environment of underwater welding and in addition it is merely a type of ceramic electrode.

Claims 15 & 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mustonen and Donaldson et al. as stated in the above paragraph and further in view of Yasutomi et al. (USPN 4,923,829).

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Mustonen and Donaldson et al. teach an underwater cutting and welding torch with a ceramic electrode having 10% void volume, but do not disclose other void volumes or different types of started material shapes.

Yasutomi et al. discloses a conductive ceramic in which the sintered body has porosity of 5 to 30%. The particle of the compound may be a whisker or a particle.

(abstract, figures, cols. 1-3)

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a whisker or particle as a starter material and have a range of porosity such as taught by Yasutomi et al. in the Mustonen and Donaldson et al. system because these are merely variations of a standard electrode product.

Response to Arguments

Applicant's arguments filed 4/27/06 have been fully considered but they are not persuasive. Applicant argues that there is no reason to combine Mustonen and Donaldson et al. The examiner respectfully disagrees because the Donaldson et al. composition yields a ceramic electrode, which has a high erosion resistance. This is extremely desirable in the underwater welding environment, which is known for its extreme degradation and wear of electrodes.

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Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Alexandra Elve whose telephone number is 571-272-1173. The examiner can normally be reached on 6:30-3:00 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 24, 2006.



M. Alexandra Elve
Primary Examiner 1725